Universitat Autònoma de Barcelona

A hopeful future

Foliar epiphytes as bioindicators of *Posidonia oceanica* state of preservation

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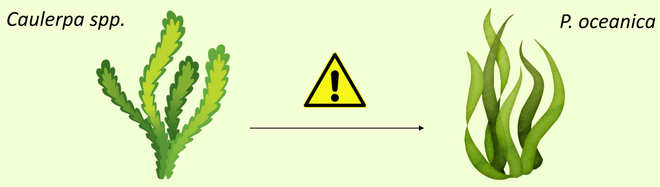
INTRODUCTION

Out of the 5 marine phanerogams found in the Mediterranean Sea, *Posidonia oceanica* (L.) Delile, 1813 is the only one which is endemic.
It forms extensive seagrass meadows which are very important at:

- Ecological level → to act as a substrate, refuge or place of settlement for many species.
- Economical level → to provide a wide variety of ecosystem services.

Unfortunately, they are subjected to a list of threats which put at risk the diversity associated with them.



AIMS OF THE STUDY

- To see if a *Caulerpa spp. c*ommunity has less biodiversity associated than a healthy *P. oceanica* community.
- To analyse the foliar epiphytes of *P. oceanica* in a good state of preservation vs. a degraded one.
- To understand the trend of *P. oceanica* meadows taking into account the current situation.

METHODOLOGY

Bibliographical information was searched and classified into 2 groups: those which described a typical or healthy meadow and those which referred to a degraded one.

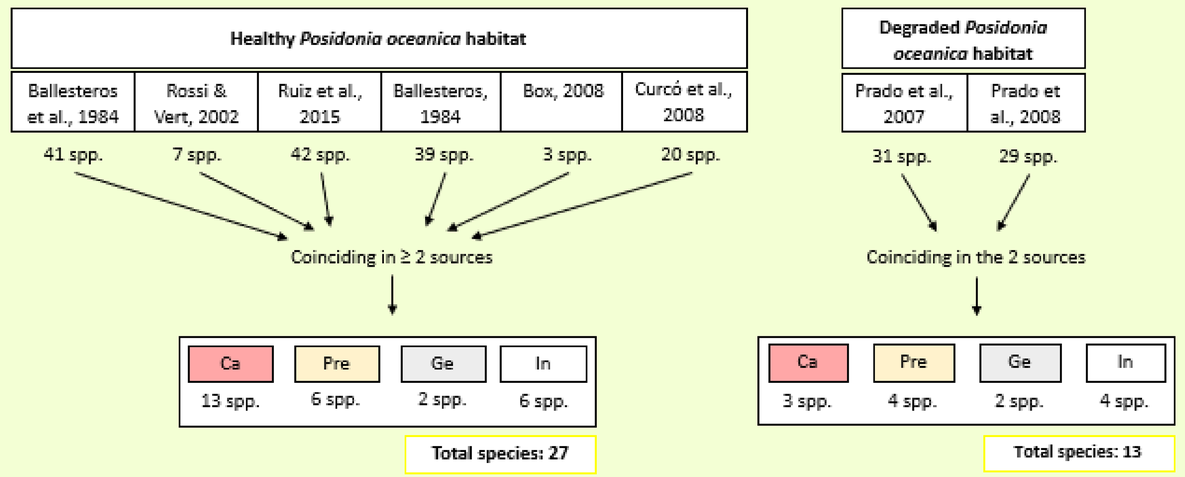


Figure 1. Methodology diagram used for the habitat characterisation and comparison.

Only foliar epiphytes species were selected and they were classified according to 2 established criteria. Finally, the two communities were characterised and the foliar epiphytes species of the two habitats compared.

RESULTS AND DISCUSSION

CHARACTERISATION

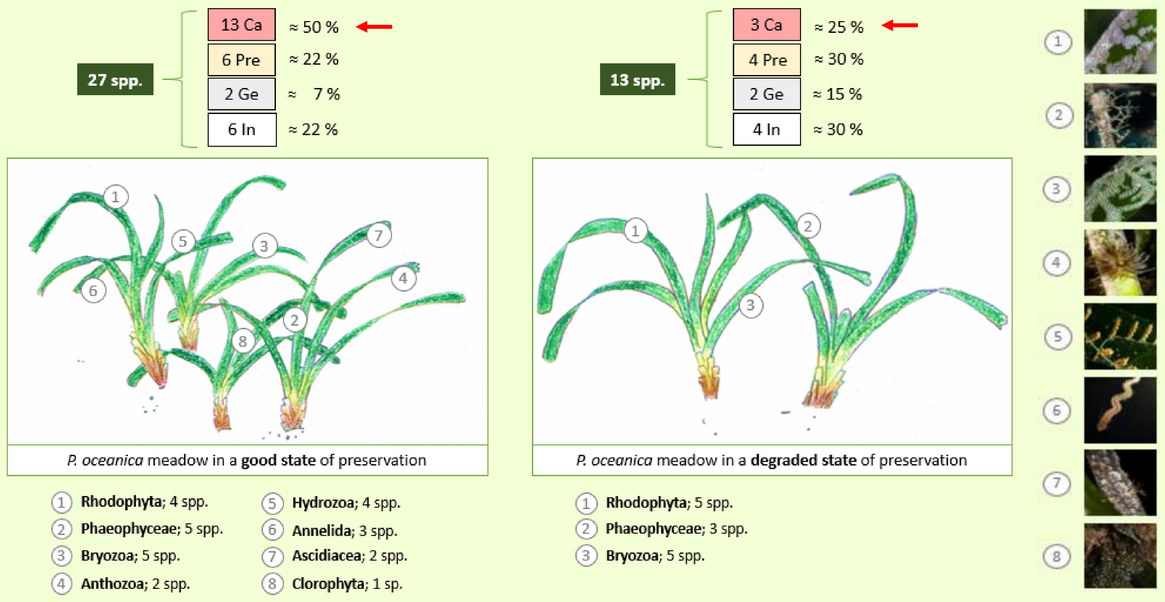


Figure 2. Results diagram with the taxonomic groups which characterise a **healthy (left)** and a **degraded (right)** *P. oceanica* meadow.

COMPARISON

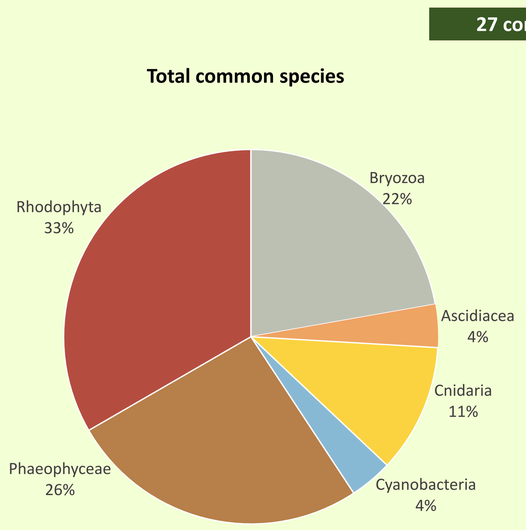


Figure 3. Common species in the two habitats classified by taxonomic groups.

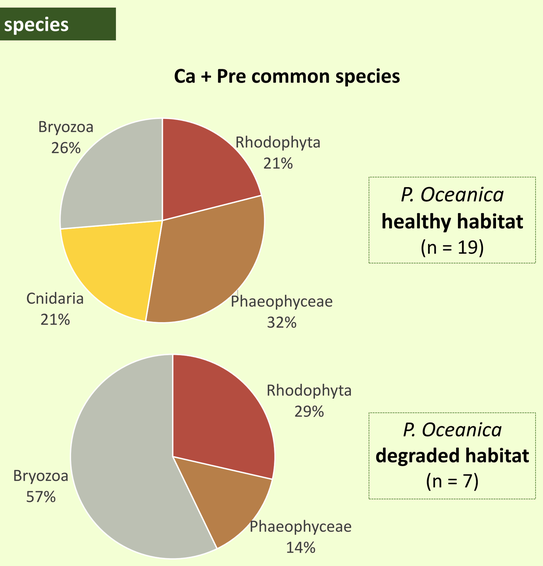


Figure 4. Characteristic and preferential species classified by taxonomic groups in a healthy habitat and a degraded habitat.

CURRENT SITUATION — Least concern at IUCN Red List

36 % Declining
20 % Increasing
44 % Showing no change

THREATS:
- Water quality degraded, anchoring, trawling & coastal modification.
- Geological dynamics change.
- Non-native macroalgae invasions.
- Climate change (↑ temperature & ↑ extreme events).

In Catalonia, *P. oceanica* meadows have different preservation states depending on the region.

However, in general, they are showing no change in trajectory due to the management measures taken.

CONCLUSIONS

- It can not be affirmed that *Caulerpa spp.* "meadows" have less biodiversity.
- As an habitat dominated by *P. oceanica* degrades, the composition of species changes: characteristic species decrease and generalist species increase.
- There is not a generalized trend of *P. oceanica* meadows to regression and the main degradation causes are the anthropogenic ones.

MANAGEMENT RECOMMENDATIONS

- More scientific research should be done and it would be convenient to standardise sampling methods.
- In order to preserve these habitats is extremely important to:
  - create networks of nature protection areas
  - keep local monitoring of the *P. oceanica* meadows
  - carry out environmental initiatives

SELECTED REFERENCES:

- Ballesteros, E., García, A., Lobo, A., & Romero, J. (1984). L'alguer de *Posidonia oceanica* de les Illes Medes. En I. Olivella (Ed.), *Els Sistemes naturals de les Illes Medes* (p. 739-759).
- Romero, J. (2004). *Posidònia: els prats del fons del mar* (Escola del Mar, Àmbit de Medi Ambient Sostenibilitat i Habitatge, & Ajuntament de Badalona (ed.); 1a ed.).
- De los Santos, *et al.* (2019). Recent trend reversal for declining European seagrass meadows. *Nat. Commun., 10*(1), 1-8.